SCOPECORDER

YOKOGAWA

701210
ScopeCorder
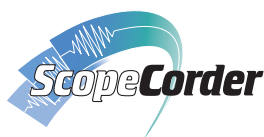## DL750

ScopeCorder

NEW

DL750(701210)
355 × 250 × 180 mm 9 kg
(13.98 × 9.8 × 7.09inch),
(Main unit and eight 701250 modules)

USB
SCSI
RS-232
GP-IB
Ethernet

CE

3-Year Warranty

★
Safety Standards ; EN61010-1
Emission ; EN61326 Class A
Immunity Standard ; EN61326

ScopeCorder: A new measurement tool combining the functions of an oscilloscope for capturing instantaneous phenomena, and a data recorder for monitoring long-term trends

FEATURES

- Up to 16 analog channels and 16-bit logic input
- Up to 1 GigaWord total memory
- GIGAZoom function
- DualCapture function
- 10.4-inch SVGA color TFT LCD
- 10 MS/s, 12 bits A/D resolution, 2-channel isolated module
- Floppy disk, ZIP disk and PC card drives available
- 20-GB internal hard drive (optional)

Leading-Edge Mounting Technology and ASICs Reduce the Size of 2-Channel Modules

■ **High-Speed (10 MS/s), 12-Bit Isolated Module (701250)**
Broad bandwidth (3 MHz) and high accuracy (0.5%) inputs

■ **High-Speed (1 MS/s), 16-Bit Isolated Module (701251)**
High resolution inputs combined with high-sensitivity (1 mV/div)

■ **Temperature/High-Precision Voltage Module (701265)**
100 Hz frequency range, high-accuracy (0.08%) voltage measurements, and an ultra high-sensitivity range value (100 μV/div)

Additional input modules will be added to the lineup in the future.

Modules

701250   701251   701265

■Innovative Solutions for Long-Term Recording

● GIGAZoom Function for Instantaneous Full-Length Display of 1 GW of Data

A large-scale, high speed ASIC was created to give the DL750 the ability to show the entire 1 GW of data on the display in real time

Roll-mode view

Two zoom windows are available for displaying up to 500 MW of data. Zooming can be done in real-time or after data recording has stopped.
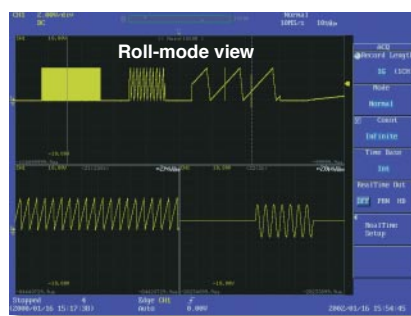
1 GW memory for full-length display and instantaneous zooming (to user-specified size)

Sample Rate	Maximum Recording Time			
	Seconds	Minutes	Hours	Days
10 MS/s	100 seconds	1.67	0.028	0.001
1 MS/s	600	10 minutes	0.167	0.007
100 kS/s	9000	150 minutes	2.5 hours	0.10
10 kS/s	72000	1200	20 hours	0.83 day
1 kS/s	864000	14400	240.0	10 days
200 S/s	2592000	43200	720.0	30 days

■ Amount of time data can be recorded with 1 GW memory

FUNCTIONS

● DualCapture: A Powerful Tool for Durability Test Data Analysis

Simultaneous High-Speed and Low-Speed Recording Using DualCapture

During durability testing, it is necessary to monitor the long-term trends of your data as well as capture the high speed transients that might occur. This presents a challenge as trend data is usually recorded at a slower sampling speed that might miss the transient phenomena. To meet this challenge, the DL750 offers the DualCapture function.

Maximum 100 MW

50kS/s   20s/div

This is the limit for 50 kS/s

User-specified captured screen and the corresponding time are displayed.

Same phenomenon

The waveform shown above was captured at a sampling rate of 50 kS/s. The occurrence of noise can be confirmed in the graph, but the time resolution is too low to capture the waveform accurately.

Using DualCapture, you can now record your trend data with a slow sampling speed and still be able to capture the transient phenomena with a faster sampling speed.

■ **Integration of a High-Speed Sampler (Oscilloscope) and Low-Speed Sampler (Recorder) in a Single Unit**
High-speed sampler: Trigger on abnormal high-speed phenomena
Low-speed sampler: Roll recording (trend recording)

■ **Separate Memory Management for Each Sampler**
Maximum memory for low-speed sampler: 100 MW
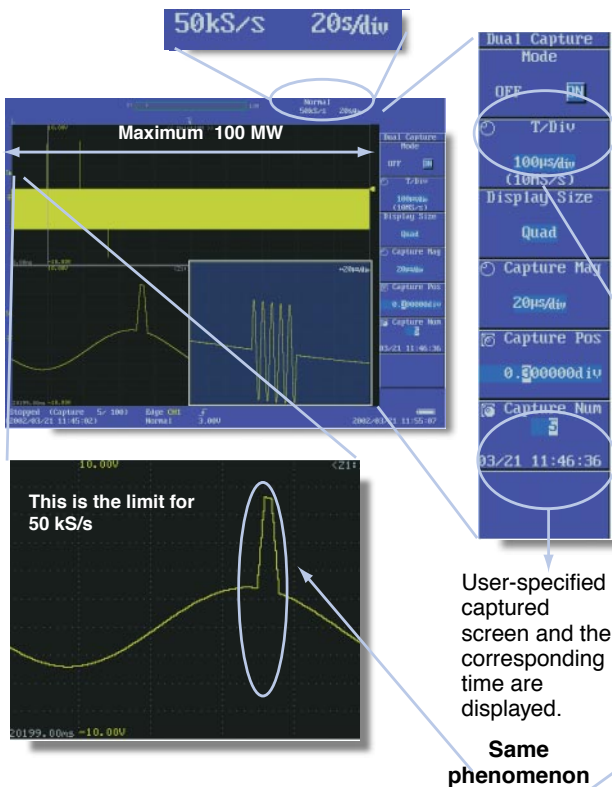Maximum memory for high-speed sampler: 10 kW × 100 screens

■ **High-Speed Sampling Triggered Only by Abnormal Phenomena Occurring During Long-Term Observation (Low-Speed Sampling)**
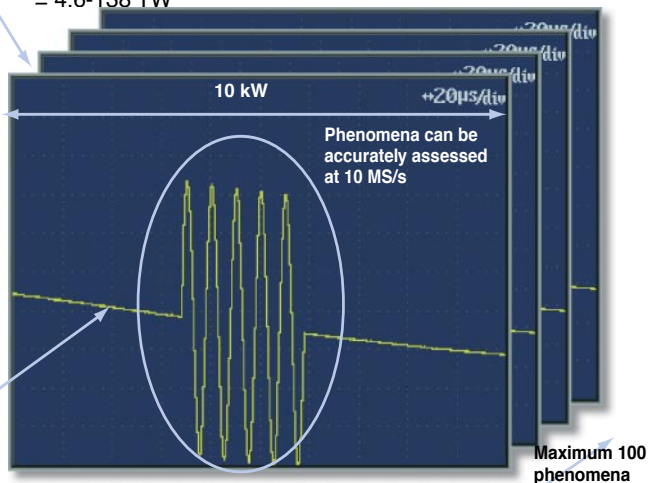Effective for separately capturing data at high speed during measurements.

■ **Long Memory Equivalent to 1 Teraword**
To acquire many hours of data at the higher sampling rate (10 MS/s) would require Terawords of memory
(8 hr-240 hr) × 60 min × 60 sec × 10 MS/s × 16 channels = 4.6-138 TW

10 kW   ←20µs/div→

Phenomena can be accurately assessed at 10 MS/s

Maximum 100 phenomena

With DualCapture, the user sets triggers for capturing sudden phenomena. Up to 100 phenomena can be collected in a memory length of 10 kW at a maximum sampling rate of 10 MS/s.

■ Accurately Measure and Display Complex Signals

● Capturing Signals Using the Longest Memory Capacity Ever

**For Accurately Capturing Complex Signals or Long Waveforms**

The DL750's standard memory capacity is 50 MW (2.5 MW per channel). This can be expanded (optional) to as much as 1 GW (50 MW per channel).

■ **Benefits of GigaWord Recording**
You can record data for 10 days (1 day/div) on the main screen, while displaying 1-second recordings (100 ms/div) in real time on the zoom screen. The large memory capacity lets you capture all of your data while still maintaining a sample rate fast enough to see any abnormal phenomena.

■ **Efficient Memory Use**
Sufficient memory length is available even when 16 channels are used, so you can conduct extended observations on multiple channels (2.5 MW per channel with standard memory, 50 MW per channel with maximum memory).
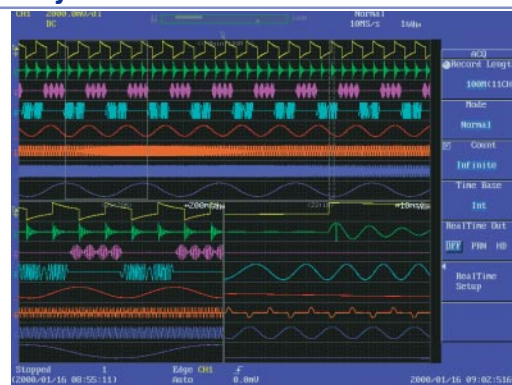
Multi-Channel 2-Location Zoom Function

SCOPECORDER

DL750

YOKOGAWA

● A Wide Range of Trigger Functions for Accurately Capturing a Variety of Waveforms

Having a wide range of triggers is of course very useful for obtaining stable observations of variety of different waveforms. In addition, the GUI menu makes setting trigger conditions easy and intuitive.

Simple and Enhanced Triggers

SIMPLE/ENHANCED

Edge trigger:	Set a regular edge trigger
A → B (N):	Triggers the n-th time that condition B goes true after condition A has gone true.
A Delay B:	Triggers if condition B goes true after condition A has gone true and an interval at least equal to the delay setting has elapsed.
Edge on A:	Activates an edge trigger on another input during the interval when trigger condition A is true.
OR:	Triggers when any one of the individual channel conditions set with the patterns goes true.
B > TIME:	Triggers when the pulse width is longer than the set time
B < TIME:	Triggers when the pulse width is less than the time
B TIME OUT:	Triggers when a preset time-out time is reached
Period:	Triggers when a preset waveform frequency condition goes true.
Window:	Triggers when a trigger source enters or leaves a level set by two points

Action-On Trigger

Automatically Save Measured Data

When this trigger is activated, the DL750 performs a specified action each time a waveform is captured and displayed on the screen. This feature is useful for saving data automatically and reliably (e.g., for data collection in automated, continuous tests).

Manual Trigger

In Addition to Simple and Enhanced Triggers, a Trigger Can Be Activated Manually with Press of a Button.

With this feature, a trigger can be executed whenever you like, separate from the preset trigger conditions.

MANUAL TRIG

● History Memory and Smart Search for Effective Access to Large Amounts of Captured Data

History Memory and History Search (Zone Search)

HISTORY

Occasionally, you may capture an abnormal waveform and then have it quickly disappear from the display as new data is acquired.
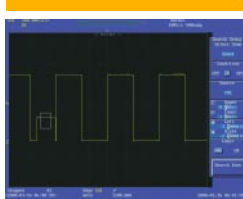It is not always possible to manually Start and Stop data acquisition to catch the abnormal waveform and have it displayed. The History Memory function was designed for such situations. It divides long memory into a number of blocks and automatically stores up to 2000 previously captured waveforms. This means you can reliably save displayed waveforms to memory even when there are phenomena for which trigger conditions cannot be set.
The Zone Search function lets you define zones on the screen, and find all previously captured waveforms that either pass or don't pass through the user-defined zone. Up to four zones can be defined.

Abnormal waveforms in the specified zone are extracted.

Zone setting

Up to 2000 screens of History Memory data.
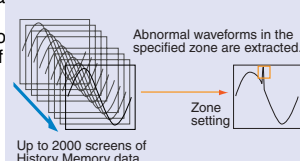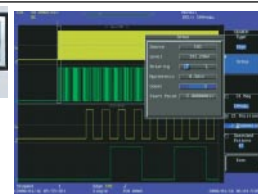
View all stored waveforms simultaneously → Find all waveforms passing through zones

Search (Edge Search) and Zoom

The Edge Search counts rising and falling edges in the captured data. It automatically searches for the desired edges and displays them on a zoom screen.

ZOOM SEARCH

■ Analyze Captured Waveform Data

● Automatically Measure Waveform Parameters

Easily Reading Measured Waveform Frequency, Rise Time, and Other Parameters

Waveform parameters such as voltage, frequency, and RMS are measured automatically. In addition to general parameter measurement function, the DL750 comes standard with functions such as the following:

Pulse Count

This function automatically calculates and displays the pulse count for an input signal in a range defined by cursors. It is useful for measuring rotation pulse counts of equipment like stepping motors, for tracking error signal counts for optical discs and other devices, and for counting encoder output pulse counts.

P1sN(C1) 21
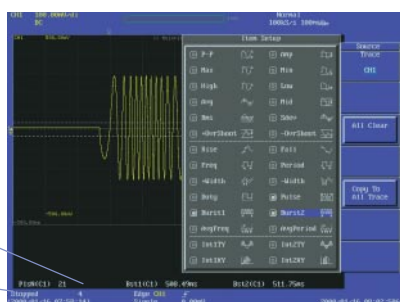
Example of pulse count settings

Single-Cycle Mode

In this mode, the DL750 determines a cycle, then calculates items pertaining to the voltage axis and surface area in that cycle. Range settings can be used to obtain accurate single-cycle RMS and average value measurements.

Linear Scaling

### Convert Measured Voltage Values to Physical Values for Direct Reading

This function automatically performs the following calculation based on a scaling coefficient A and offset B: $Y = AX + B$ (X is a measured value and Y is the scale value)The results of this calculation are reflected in cursor measurement values and waveform parameter measurement values. In addition, user-determined scale values can be defined for any two measurement, P1 and P2.
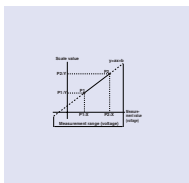
GO/NO-GO Judgment

Automatic Waveform Determinations

With this function, the user specifies a zone or waveform parameter for a measured waveform. The measurement signal is evaluated and a specified action is performed automatically based on the evaluation. Available actions include outputting a screenshot to a specified destination, saving waveform data to a specified storage medium, sounding a buzzer, and sending email.
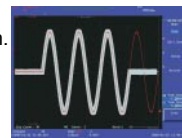
User-Defined Math Function (with the /G2 Option Only)

Perform Complex Calculations

The DL750 comes standard with basic arithmetic operations (addition, subtraction, multiplication, division), FFT (power spectrum), and phase shifting (calculating a phase shift between channels). For more flexible and complex calculations, an optional user-defined math function package is available. With this option, you can define up to eight different formulas using a wide range of functions, including a triangle function, differentiation, integration, square root, digital filter, and seven different FFT functions.
You can also specify the results of a calculation as a parameter in another formula. With these capabilities, the DL750 makes it easy to perform complex calculations that, in the past, could only have been done by loading data onto a PC.

■ Display and Data Recording Functions

Real-Time Hard Drive Recording (with the /C8 Option Only)

Recorder-Like Real-Time Data Recording over Extended Periods

With the optional internal hard drive, you can record measurements to the hard drive in real time. This makes it easier to manage and analyze data using PCs and other tools.
Maximum data capacity:
1 GW
Maximum sampling rate: 100 kS/s (using 1 channel only)

Memory Backup Function

### Protects Your Data Even If the Power Supply Goes Out

This function backs up about 10 hours of data saved to the acquisition memory immediately prior to power loss. Memory backup helps you avoid losing important data even if the power supply is unstable and gets cut off. (Backup time varies according to the usage environment. Four AA batteries are required for memory backup.)

Snapshot Function

### Enables On-Screen Waveform Comparisons

Using the snapshot function, you can keep the currently displayed waveform with the touch of a button. Snapshots are useful for comparing a reference waveform with an input waveform. In addition, snapshots can be saved to and loaded from the storage media.
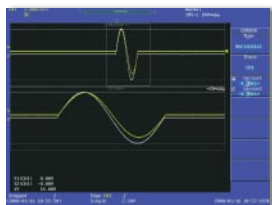
X-Y Display Function

Display an Overlay of up to Four X-Y Displays

This function lets you display multiple X-Y plots together, making relative phase comparisons easy. The X-Y display function is a powerful tool for applications such as evaluating DC motors based on a Lissajous waveform.
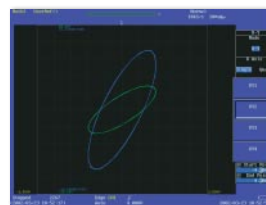
All-Channel Setup Menu

Quickly View the Setup of All Channels

This menu lets you review and modify all of the channel setups from a single screen display. Parameters such as voltage axis sensitivity, screen scale settings, and linear scaling can be configured for each channel.
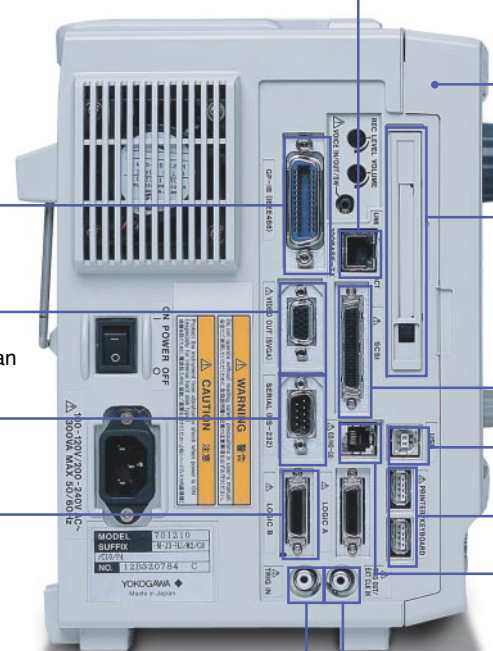
Wide Waveform Display

Increase the Viewing Area of Display

With the SVGA color TFT liquid crystal display, the number of display pixels has been greatly increased. For wide waveform display, set the resolution to 750 × 512 pixels.

■ Complete Connectivity

■ Ethernet (optional)
Supports 100BASE-TX and
10BASE-T

■ Internal hard drive (optional):
20 GB (FAT32)

■ GP-IB

■ Drive (select one of three options)
• Floppy
• Zip® (250 MB/100 MB)
• PC card (Flash ATA card)[1]
(16 MB to 5 GB)

■ Video Out (SVGA)
Outputs a video signal so
waveform can be viewed on an
external monitor

■ SCSI interface

■ SERIAL (RS232)

■ USB—PC jack (complies with USB Rev.
1.1)

■ Logic input (8 bits × 2)

■ USB peripheral jacks[1]

■ GO/NO-GO I/O
External start/stop

■ External trigger input

■ Trigger output/external clock input (switch)
Outputs TTL level trigger signals
External clocks as fast as 1 MHz can be
used (with 701250 or 701251).

1 Ask for information on compatible products.

USB

• Connecting to a PC

(Supported operating systems: Windows 98 SE, Windows 2000 Pro, Windows Me)

Just as for RS232 and GB-IB, you can write your own custom programs in Visual C++ 6.0 or Visual Basic 6.0 to control the DL750 through a USB interface. PC communications are made easy with the Waveform Viewer and Wirepuller software programs.

• Connecting USB Peripheral Equipment

USB keyboards and USB printers can be directly connected to the DL750.

Ethernet (Optional)

• Connecting to a PC

■ **Web Server and FTP Server**

The DL750 has a variety of server functions that let you perform remote controls or download waveform data and screen images onto a PC. You can also access the DL750 through the Internet Explorer. Just as for RS232 and GB-IB, you can write your own custom programs in Visual C++ 6.0 or Visual Basic 6.0 to control the DL750 through a USB interface.
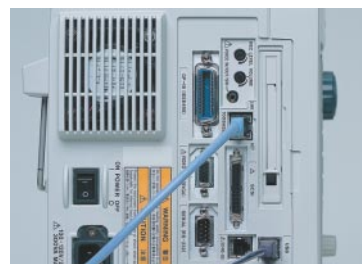
IMAGE SAVE Key and Thumbnail Screen Images
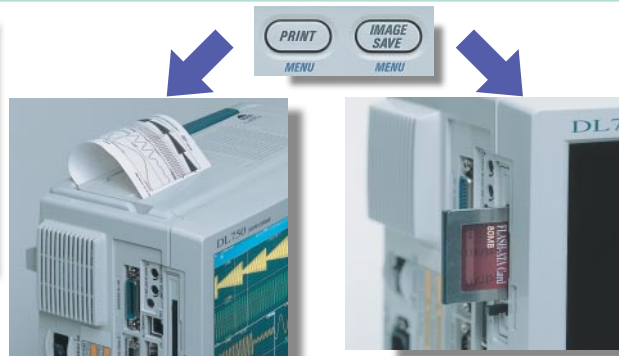
Simply press the IMAGE SAVE key to save image data to a CompactFlash card or other storage media. The saved image data (PNG, JPEG, BMP, or PostScript format) can then be displayed on the DL750's screen as thumbnails. The PRINT key lets you output images to the DL750's build-in printer, a USB printer, or a network printer.

Thumbnail display

PRINT MENU   IMAGE SAVE MENU

■ Use a PC for Instrument Control and for Viewing Data

Web Services

Turn Your DL750 into a Web Server

The DL750 can function as an independent Web server. Connect to your DL750 directly using Internet Explorer, and access a variety of services.

- ■ **File Transfer (FTP)**
- ■ **Waveform Monitor (Monitor)**
- ■ **Execution of Simple Control Commands (Control Script)**
- ■ **Waveform Data Acquisition (Data Capture)**

Wirepuller

Control Your DL750 and Monitor Waveforms through a PC

With the Wirepuller software program, you can use your PC to control the DL750 through an Ethernet, USB, or GP-IB interface. When you open Wirepuller, an image of the DL750's front panel appears on your PC's monitor. You can control the DL750 through actions on the PC display. You can also view waveforms on the PC. In addition to the DL750, Wirepuller also works with DL1700 series and DL7000 series oscilloscopes.

Wirepuller is available free of charge. You can download it at the following URL (requires registration):
http://www.yokogawa.com/tm/Bu/DLsoft/wire/
Further details are available at the Yokogawa web site.
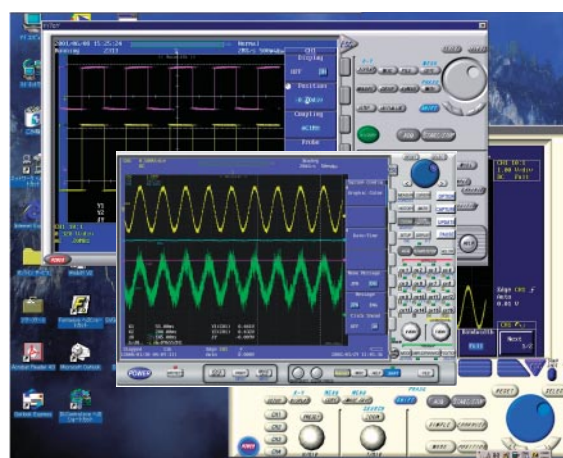
700919 Waveform Viewer for DL Series (Sold Separately)

Display Waveform Data Files (WVF Files) Captured with the DL750 on Your PC

The Waveform Viewer software program lets you display waveform data files (the .wvf File extension) captured with the DL750 on your PC. As many as 24 analog waveforms can be displayed simultaneously. In addition to the DL750, this program also works with other DL series instruments.

You can download a trial version of the Waveform Viewer for DL Series at the following URL:
http://www.yokogawa.com/tm/Bu/700919/
Further details are available at the Yokogawa web site.

SCOPECORDER

DL750

YOKOGAWA
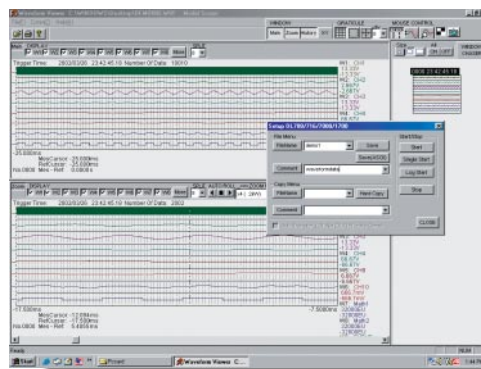
SPECIFICATIONS

Basic Specifications

● Input
Type	Plug-in module (Each unit has a build-in A/D converter)
Slots	8
Logic inputs	16 (8 bits × 2)

● Horizontal
Maximum record length	2.5 MW/CH, 50 MW total (standard)
	10 MW/CH, 250 MW total (with /M1 option)
	25 MW/CH, 500 MW total (with /M2 option)
	50 MW/CH, 1 GW total (with /M3 option)
Time axis accuracy[1]	±0.005%
Sweep time	500 ns to 5 sec/div (1/2/5 steps), 10 sec/div, 20 sec/div, 30 sec/div
	1 to 10 min/div (1 min steps), 12 min/div, 15 min/div, 30 min/div
	1 to 10 h/div (1 h steps), 12 h/div
	1 day/div, 2 days/div, 3 days/div

● Acquisition modes
Normal	Maximum sampling rate: 10 MS/s
Envelope	Holds peak value at maximum sampling rate, regardless of time/div setting
Box average	Increases A/D resolution up to 4 bits (up to 16 bits)
Averaging	Number of averagings: 2-65,536 (2^n steps)
Roll	100 msec/div or less

● Triggers
Modes	AUTO, AUTO LEVEL, NORMAL, SINGLE, SINGLE (N), LOG
Simple trigger source	CH1 to CH16, LINE, EXT, LOGIC_A, LOGIC_B, TIME
Slope selection	CH1 to CH16: Rise, fall, rise-fall, EXT (external trigger input) LOGIC_A, LOGIC_B: Rise, fall Time: Date (year/month/date), hour (hours/minutes), time interval (1 minute to 24 hours)
Enhanced trigger source	CH1 to CH16, LOGIC_A, LOGIC_B
Enhanced trigger type	A → B (N), A delay B, B > Time, B < Time, B Time Out, Period, Windows, OR, Edge On A

● Screen updating rate   Maximum 30 screens/sec for a single waveform

1: Typical operating conditions:
Ambient temperature of 23°C ±5°C, ambient humidity (RH) of 55±10%

Display

Display	10.4-inch color TFT LCD
Effective screen size	211.2 mm × 158.4 mm
Resolution	800 × 600[1]
Waveform display pixels	650 × 512 (in normal waveform display mode)
	750 × 512 (in wide waveform display mode)
Display modes Split	Single, dual, triad, quad, octal
Zoom	Main, Main & Z1, Main & Z1 & Z2, Main & Z2, Z1 Only, Z2 Only, Z1 & Z2 (Z1 and Z2 are abbreviations for zoom area 1 and zoom 2, respectively)
XY	Single Mode (X is fixed, Y is set by user), Quad Mode (XY1, XY2, XY3, XY4)
Accumulation	PERSIST Overlay in one color.

1: The LCD may contain some pixels that are always off or always on. In addition, brightness may vary due to the characteristics of the liquid crystal display. This is not an indication of any problem with the display.

Recorder

● Built-in printer
Printing method	Thermal line-dot printing
Paper width	112 mm
Effective recording width	104 mm
Functions	Screen printing, long printing

● Real-time hard drive recording (with /C8 option)
Data capacity	1 GW
Maximum sampling rate	100 kS/s (using 1 channel)

DualCapture

This function captures the same waveform data at two different sampling rates.
Main (low-speed) maximum sampling rate	Roll mode area at 100 kS/s
Sub (high-speed) maximum sampling rate	10 MS/s
Main maximum memory length	100 MW (with /M3 option)
Sub memory length	10 kW (fixed)
Sub maximum number of captured screens	100

Analysis Functions

● Channel-to-channel calculation function
Number of definable calculation waveforms	8
Calculable record length	800 kW (using MATH1 only)
	100 kW (using MATH1 through MATH8)
Standard Operators	Addition, subtraction, multiplication, division, binary conversion, phase shifting, FFT
FFT type	PS (Power Spectrum)
Number of points	1000, 2000, 10,000
Window functions	Rectangular, Hanning, Flat-Top

User-defined math function (with /G2 option)
Operators	ABS, SQR, LOG, EXP, NEG, SIN, COS, TAN, ATAN, PH, DIF, DDIF, INTG, BIN, P2, P3, F1, F2, FV, PWHH, PWHL, PWLH, PWLL, PWXX, FILT1, FILT2, HLBT, MEAN, MAG, LOGMAG, PHASE, REAL, IMAG
FFT types	LS, PS, PSD, CS, TF, CH
Number of points	1000, 2000, 10,000
Window functions	Rectangular, Hanning, Flat-Top

Waveform Measurement

● Cursors
Types	Horizontal	Two horizontal cursors
	Vertical	Two vertical cursors
	Marker	Four markers
	Degree	Displayed a cursor at a specified angle (for TY display only)
	H&V	(for XY display only)

● Automatic Measurement of Waveform Parameters
Maximum number of measured parameters	24
Measured parameters	P-P, Max, Min, High, Low, Avg, Rms, StdDev, +Oshot, -Oshot, Rise, Fall, Freq, Period, +Duty, +Width, -Width, Pulse Burst1, Burst2, Avg Freq, Avg Period, Delay, Int1TY, Int2TY, Int1XY, Int2XY

● GO/NO-GO Judgment
Parameter:	Make judgments using combinations of 16 waveform parameters.
Zone:	Make judgments using combination of up to 6 waveform zones (AND, OR)
Actions:	One or more of the followings: outputs screen image data, saves waveform data, sounds a buzzer, sends email

Screen Data Output (Printer)

Destinations		Select built-in printer, external USB printer, or network printer (with /C10 option)
Formats	Normal	Outputs hard copy of screen shot
	Long	Outputs displayed waveform enlarged along time axis

Screen Data Output (Image Saving)

Destinations	Installed drive (floppy drive, Zip® drive, or PC card), external SCSI drive, internal hard drive (with /C8 option), network drive (with /C10 option)
Formats	PNG, JPEG, BMP, PostScript

External I/O

● LOGIC input specifications
Input points	8 bits × 2
Maximum sampling rate	10 MS/s
Compatible probes	Non-isolated (700986 (8 bits)), isolated (700987 (8 bits))

● EXT TRIG IN/EXT TRIG OUT
Connector	RCA pin jack
Input/output level	TTL (0 to 5 V)

● EXT Clock IN
Connector	RCA pin jack
Input level	TTL (0 to 5 V)
Input frequency	Up to 1 MHz (for module 701250 and 701251), up to 500 Hz (for module 701265)

● Communication interfaces   GP-IB, USB peripheral equipment jacks (USB keyboards and USB printers), USB (complies with Rev. 1.1, for connection to PC), Ethernet (complies with 100BASE-TX and 10BASE-T; with /C10 option), serial (RS232), and SCSI

● GO/NO-GO I/O
Connector type	Modular jack (RJ12)
I/O level	TTL (0 to 5 V)

● Probe power terminal (with /P4 option)
Maximum number of probes powered	4
Compatible probes	Current probes 700937 (15 Apeak) and 701930 (150 Arms)
Maximum number of current probes that can be used at one time	4 (module 700937), 2 (module 701930)

Acquisition Memory Backup

Batteries	Four AA alkaline dry cells (AA/R6) (JIS and IEC type name: LR6) or four nickel metal-hydride rechargeable batteries
Backed up data	Acquisition memory (waveform data)
Backup duration (reference value)[2]	Approximately 10 hours (with /M3 option)

2: This backup time is a reference value only. Actual backup duration will vary according to the usage conditions.

Media Drives

Internal media drives	Floppy drive, Zip®, or PC card (choose one), and 20 GB hard drive (with /C8 option)

General Specifications

Rated supply voltage	100 to 120 VAC/200 to 240 VAC (automatically switched)
Rated supply frequency	50/60 Hz
Power consumed	300 VA
Maximum voltage	1500 VAC for one minute across power supply and ground
Insulating resistance	10 MΩ or greater at 500 VDC across power supply and ground
Exterior Dimensions	355 × 250 × 180 mm (WHD), excluding knobs and protrusions
Weight	Approx. 6.6 kg (main unit with full options, including M3, C8, C10, and P4)
	Approx. 9 kg (main unit and eight 701250 modules)
Operating temperature range	5 to 40°C

■ Plug-In Module Specifications

10 MS/s High-Speed 12-Bit Isolation Module (701250)

Input channels	2
Input couplings	AC, DC, GND
Maximum sampling rate	10 MS/s
A/D conversion resolution	12 bits (150 LSB/div)
Input type	Isolated unbalanced
Frequency range (-3 dB)[1]	DC, up to 3 MHz

Input range value (for 10 div display)
In combination with 700929
    50 mV/div to 200 V/div (1/2/5 steps)
Main unit only   5 mV/div to 20 V/div (1/2/5 steps)
Maximum input voltage (1 kHz or less)
In combination with 700929 (between probe tips H and L[2]): 600 V (DC + ACpeak)
Main unit only   (between input terminals H and L[4]): 250 V (DC + ACpeak)
Maximum allowable in-phase voltage
In combination with 700929 (between probe tip H or L and case ground[3]): 400 Vrms (CAT I), 300 Vrms (CAT II)
Main unit only   (between input terminal L and ground[5]): 42 V (DC + ACpeak) (CAT I and CAT II, 30 Vrms)

DC accuracy[1]	±(0.5% of 10 div)
Input impedance	1MΩ ±1%, approx 35 pF
Connector type	Isolated type BNC connector
Input filter	OFF, 500 Hz, 5 kHz, 50 kHz, 500 kHz

Temperature coefficient
    Zero point ±(0.05% of 10 div)/°C (typical value)
    Gain ±(0.02% of 10 div)/°C (typical value)

### 1 MS/s High-Speed 16-Bit Isolation Module (701251)

Input channels	2
Input couplings	AC, DC, GND
Maximum sampling rate	1 MS/s
A/D conversion resolution	16 bits (2400 LSB/div)
Input type	Isolated unbalanced
Frequency range (-3 dB)[1]	DC, up to 300 kHz (20 V/div to 5 mV/div)
	DC, up to 200 kHz (2 mV/div, 1 mV/div)

Input range value (for 10 div display)
In combination with 700929 10 mV/div to 200 V/div (1/2/5 steps)
Main unit only   1 mV/div to 20 V/div (1/2/5 steps)
Maximum input voltage (1 kHz or less)
In combination with 700929 (between probe tips H and L[2]): 600 V (DC + ACpeak)
Main unit only   (between input terminals H and L[4]): 140 V (DC + ACpeak)
Maximum allowable in-phase voltage
In combination with 700929 (between probe tip H or L and case ground[3]): 400 Vrms (CAT I), 300 Vrms (CAT II)
Main unit only   (between input terminal L and ground[5]): 42 V (DC + ACpeak) (CAT I and CAT II, 30 Vrms)

DC accuracy[1]	
5 mV/div to 20 V/div	±(0.25% of 10 div)
2 mV/div	±(0.3% of 10 div)
1 mV/div	±(0.5% of 10 div)
Input impedance	1 MΩ ±1%, approx. 35 pF
Connector type	Isolated type BNC connector
Input filter	OFF, 400 Hz, 4 kHz, 40 kHz

Temperature coefficient
    Zero point 5 mV/div to 20 V/div: ±(0.02% of 10 div)/°C (typical value)
    Gain 1 mV/div to 20 V/div: ±(0.02% of 10 div)/°C (typical value)

Temperature/High-Speed Voltage Module (701265)

Inputs	2
Input couplings	TC (thermocouple), DC, GND
Input type	Isolated unbalanced

Applicable sensors (input coupling: TC)
    K, E, J, T, L, U, N, R, S, B, W, iron-doped gold chromel

Data updating rate	500 Hz
Frequency range (-3 dB)[1]	DC, up to 100 Hz
Voltage accuracy	±(0.08% of 10 div + 2 μV)

Temperature measurement accuracy[8]
  K, E, J, T, L, U, N ±(0.1% of reading + 1.5°C), but ±(0.2% of reading + 1.5°C) between -200°C and 0°C
    R, S ±(0.1% of reading + 3°C), but ±8°C between 0°C and 200°C and ±5°C between 200°C and 800°C
      B ±(0.1% of reading + 2°C), but ±8°C between 400°C and 700°C
     W ±(0.1% of reading + 3°C)
  Iron-doped gold/chromel ±4 K between 0 and 50 K
    ±2.5 K between 50 and 300 K
Max input voltage (1 kHz or less)
    (between signal H and L)[6]: 42 V (DC + ACpeak)
Max allowable in-phase voltage (1 kHz or less)[7]
    42 V (DC + ACpeak) (CAT I and CAT II, 30 Vrms)
Input range value (for 10 div display)
    100 μV/div to 10 V/div (1/2/5 steps)

Input connector	Binding post
Input impedance	Approx. 1 MΩ
Input filter	OFF, 2 Hz, 8 Hz, 30 Hz

Reference junction compensation accuracy (with input terminal temperature balanced)
    ±1°C (K, E, J, T, L, U, N)
    ±1.5°C (R, S, B, W)
    ±1 K (iron-doped gold/chromel)
Temperature coefficient (for voltage)
    Zero point ±(0.01% of 10 div)/°C + 0.05 μV/°C (typical value)
    Gain ±(0.02% of 10 div)/°C (typical value)
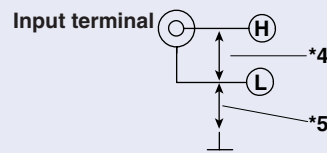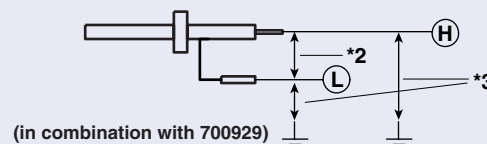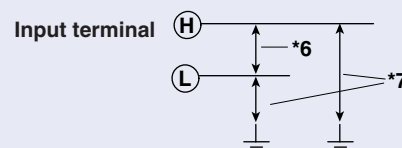
⚠ Warning
Do not exceed the maximum input voltage, withstand voltage, or surge current. In order to prevent electric shock, be sure to ground the main unit. In order to prevent electric shock, be sure to tighten the module's screws. Electrical protective functions and mechanical protective functions will not be effective.

1 Under typical operating conditions (ambient temperature of 23°C ±5°C, ambient humidity (RH) of 55 ±10%; after calibration following 30-minute warmup period)
8 Does not include reference contact compensation accuracy.

DL750 Model Number and Suffix Codes

Model/Options	Suffix Code			Description
701210				DL750 ScopeCorder[1]
Power cable	-D			UL and CSA standard
	-F			VDE standard
	-Q			BS standard
	-R			SAA standard
Help language	-HE			English and Japanese online help[2]
	-HJ			Japanese and English online help[2]
Internal media drive[3]		-J1		Floppy drive
		-J2		Zip® drive
		-J3		PC card interface
Memory expansion			/M1	Memory expansion to 10 MW/CH[4]
			/M2	Memory expansion to 25 MW/CH[4]
			/M3	Memory expansion to 50 MW/CH[4]
Others			/C8	Internal 20 GB hard drive (FAT32)
			/C10	Ethernet interface
			/G2	User-defined math function
			/P4	Probe power (4-output)

1 Plug-in modules are not included.
2 Choose one.
3 Choose one.
4 Choose one.

Standard Accessories

Product	Order Q'ty
Power cable	1
User's manuals (one set)	1
Transparent front cover	1
Printer roll paper (10 meters)	3
Cover panels (for blank module slots)	8
Rubber feet (four per set)	1
Soft case (for storing accessories)	1

SCOPECORDER

DL750

YOKOGAWA

■ Accessories

Probes, Cables, and Converters

Products	Model No.	Safety Spec	Allowable Voltage/Current (rated values for standalone cables/probes)[1]	Descriptions
Isolated probe	700929	1000 Vrms CAT II (probe standalone spec)	1000 Vpeak (probe standalone spec)	10:1 safety probe, capacitance adjustment range of 20–45 pF, for 701250 and 701251
Current probe	700937	300 Vrms CAT I	15 Apeak	Frequency range: DC, up to 50 MHz (Connect to probe power terminal for use)
Current probe	701930	300 Vrms CAT III	150 Arms	Frequency range: DC, up to 10 MHz (Connect to probe power terminal for use)
Differential probe	700924	1000 Vrms CAT III	1400 Vpeak (1000 Vrms)	1000:1, 100:1
1:1 BNC safety adapter lead	701901	1000 Vrms CAT II	1000 Vpeak	Must be combined with 758922 or 758929
Alligator adapter	758922	300 Vrms CAT II	300 Vrms	Two per set
Alligator adapter	758929	1000 Vrms CAT II	1000 Vrms	Two per set
Connecting cable (low-voltage, 1:1)	366926	—	42 Vpeak or less[4]	Non-isolated type, for low-voltage measurement at 42 Vpeak or less
High-speed logic probe[2]	700986	—	42 Vpeak or less[4]	8-bit non-isolated, 1 μs response speed
Isolated logic probe[3]	700987	250 Vrms CAT II	250 Vrms	8-bit, each channel isolated, 20 ms response speed (with AC)
Isolated logic measurement lead	758917	1000 Vrms CAT II	1000 Vrms	Isolated logic probe measurement leads (2 per set)
Adapter	366928	—	42 Vpeak or less[4]	BNC (jack)-RCA (plug) adapter

1 The actual usable voltage is the lower value of the main unit's spec and the cable or probe's spec.
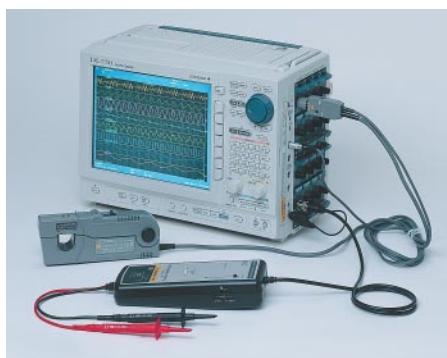2 One B9879PX connecting lead and one B9879KX connecting lead are included.
3 For measurement, 758917 must also be combined with 758922 or 758929.
4 Cables and connectors rated at 42 Vpeak or less are both non-isolated types.

Additional Supplies

Product	Model No.	Description
Printer roll paper	B9988AE	111 mm × 10 meter rolls Order quantity: 10 rolls to a package

DL750 with current probe 701930 and differential probe 700924 connected.
The model 701930 can be powered when the /P4 option is selected.
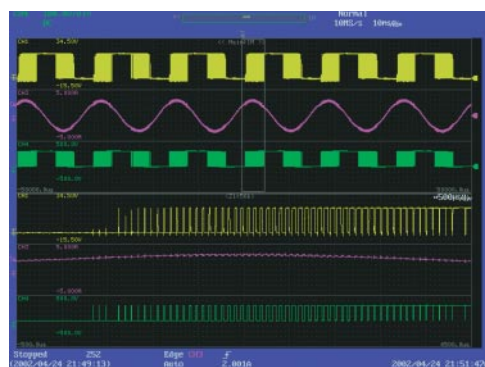
Measuring inverter I/O signals and control signals using the 10 MS/s high-speed 12-bit isolated module, current probe 700937 and isolated probe 700929
The model 700937 can be powered when the /P4 option is selected.

Plug-In Module Model Numbers[1]

Model No.	Description
701250	High-speed 10 MS/s 12-bit isolation module (2 CH)
701251	High-speed 1 MS/s 16-bit isolation module (2 CH)
701265	Temperature/high-precision voltage module (2 CH)

1 Probes are not included with any modules. Probes must be purchased separately as accessories if required.
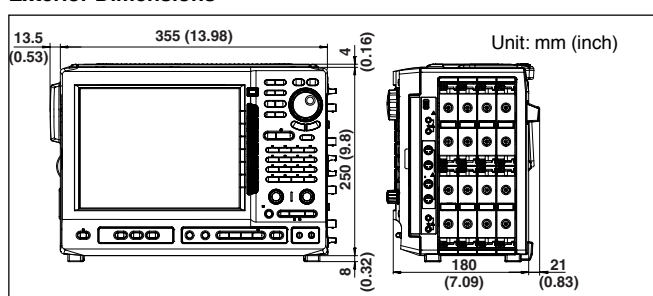
Yokogawa's Approach to Preserving the Global Environment

● Yokogawa's products are developed and produced in facilities that have received ISO14001 approval.

● In order to protect the global environment, Yokogawa's electrical products are designed in accordance with Yokogawa's Environmentally Friendly Product Design Guidelines and Product Design Assessment Criteria.

Exterior Dimensions

Unit: mm (inch)

NOTICE

● Before operating the product, read the user's manual thoroughly for proper and safe operation.

● If this product is for use with a system requiring safeguards that directly involve personnel safety, please contact the Yokogawa sales offices.